



ADVERSE EFFECTS OF SMOKING ON SERUM CHOLESTEROL LEVELS

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Abstract: Smoking is a major public health problem and is associated with significant morbidity and mortality. Many studies have reported derangement of serum cholesterol levels in smokers, adding to the suffering. The present study was carried out to compare serum cholesterol levels between smokers and non-smokers. Serum samples from 100 chronic smokers and equal number of non-smokers were collected and cholesterol levels were measured. Majority of non-smokers (72%) had serum cholesterol level ranging between 150-200mg% as compared to smokers (27%). Significant higher levels (>250mg%) were found in smokers (40%) as compared to non-smokers (6%). Increased duration and burden of smoking were significantly associated with deranged cholesterol levels ($p \leq 0.05$). Vigorous nationwide campaigns should be carried out to educate the society of ill effects of smoking.

Keywords: Smoking, Cholesterol.

INTRODUCTION

Smoking appears to exert detrimental effects on lipid profile.^[1,2] Although lipid assessment in smokers often yield inconsistent finding, trends towards adverse alterations have been noted. Many studies have reported smoking to be associated with significantly higher levels of total cholesterol.^[3,4] So deranged lipid profile, a common manifestation in smokers, contribute a lot to increasing incidence of atherosclerosis in smokers and the incidence has been reported to be higher among heavy smokers.^[5] Therefore this study was conducted to estimate and compare the levels of serum cholesterol among smokers and non-smokers.

MATERIAL METHODS

In the present study, hundred apparently healthy smokers in the age range of 25-75 years, who were smoking for the last 5-20 years, were selected to serve as subjects. Equal number of age matched, healthy volunteers from the same population were selected to serve as control subjects for comparison. The subjects with diabetes, hypertension, ischemic heart disease, renal disease, hepatic malfunction were not included in this study. Serum cholesterol was estimated by the method of Zlatkis modified by Zak (1953).^[6]

Principle:

The principle of cholesterol estimation, involves extraction of cholesterol from a given blood sample using Acetone; Alcohol in ratio of 1:1 (V/V). The extract is evaporated and dissolved in glacial acetic acid and its estimation is done by carrying out a colour reaction with ferric chloride and concentrated sulphuric acid. During the course of reaction, acetone: alcohol precipitates out proteins to avoid any interference by

proteins in the process of color formation and measurement of optical density values.

RESULTS

Table 1 shows serum cholesterol levels in smokers and non-smokers. Table 2 shows the relation of duration of smoking with the serum cholesterol levels. Table 3 shows the levels of serum cholesterol in relation number of cigarettes smoked per day.

DISCUSSION

In our study, serum cholesterol levels were found to be higher in smokers as compared to non-smokers. Many other authors have also reported significant higher levels of total serum cholesterol among smokers. The raised serum cholesterol levels amongst smokers signify the accelerated risk of atherosclerosis amongst such individuals. The mechanism by which smoking alters lipids is not clear but it might be nicotine induced lipolysis in the adipose tissue providing precursors for the synthesis of cholesterol.^[7,8] The free radicals generated in the smokers bring about the oxidation of LDL-cholesterol and triggers the pathway to foam cell formation & then to the formation of atherosclerotic plaque. Analysis of effect of duration of smoking with level of serum cholesterol in our study shows that, with increase in duration of smoking, the risk of higher serum cholesterolemia increases and this was found to be significant ($p < 0.05$) This is in accordance with other studies.^[9,10] Many of our study subjects were in the age group 25-40 years. This is a worrisome problem as these young adults may be significantly more at risk from subsequent coronary heart disease.^[11]

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Our study also highlights a direct relation between serum cholesterol levels and dose/quantity of cigarettes smoked per day. Heavy smokers were found to be having significantly ($p < 0.05$) higher levels of serum cholesterol which corroborates the findings of other authors.^[12,13]

CONCLUSION

Smoking is a recognized risk factor for high serum cholesterol levels which results in increased risk of coronary disease. Nationwide campaigns should be held to educate the general public regarding the health risks associated with smoking, which in the long run will help to decrease the morbidity and mortality associated with this menace.

Table.1: Comparison of serum cholesterol levels between smokers and non-smokers.

Subjects	150-200 mg%	200-250mg%	250-350mg%
Smokers	27	33	40
Non smokers	72	22	6

Table.2: Relation between duration of smoking and serum cholesterol levels

Duration of smoking (in years)	150-200 mg%	200-250 mg%	250-350 mg%
1-10	15	12	3
10-20	8	16	29
>20	4	5	8
Total (=100)	27	33	40

Table.3: Relation between number of cigarettes smoked per day and serum cholesterol levels.

No. of cigarettes smoked per day	No. of smokers	150-200 mg%	200-250 mg%	250-350 mg%
1-2 packets	45	24	17	4
3-4 packets	41	2	13	26
>5 packets	14	1	3	10
Total	100	27	33	40

$P < 0.05$ significant

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